

## Grade Ten Science – pH Lab Report

1. Complete an "Indicator Colour Table" that shows indicator colours at different pH values.
2. Complete observations table "pH Data Sheet for Common Household Item".
3. Draw a full page pH scale and label completely. This should include the numbers 1 to 14 and the regions of the scale that are acidic, neutral and basic. Indicate where you would expect to see  $H^{1+}$  and  $OH^{1-}$  ions. You do not need to include the strength of the  $H^{1+}$  or  $OH^{1-}$ . DRAW THIS SCALE VERTICALLY ON THE PAGE. To this scale add each substance that was tested in the lab in the appropriate region. You may choose a single best estimate pH based on your observations or show the range that you determined or both. You may also use the pH value measured by the pH metre.
4. The pH scale is said to be logarithmic. This means that change of one number means a change of 10 times with respect to  $H^{1+}$  or  $OH^{1-}$  strength. Using this information:
  - a) How many times more acidic is a pH of 2 than a pH of 5?
  - b) How many times more basic is a pH of 13 than a pH of 11?
  - c) Why are extreme pH values such as 1,2, 12 and 13 dangerous, while mild pH values of 5,6,8 and 9 barely noticeable?
5. What would happen if you mixed equal volumes of two solutions, one that has a pH of 2, the other with a pH of 12? Explain fully.
6. A solution is found to turn bromothymol blue to the blue colour and phenolphthalein to the clear colour. What is the pH range that the solution could have? Explain.
7. A second solution is found to turn alizarin yellow to the red colour and bromothymol blue to the green colour. What is the pH range that the solution could have? Explain.
8. Comment on some of the difficulties presented in the lab.